

REMARKS

Applicants respectfully request reconsideration of the application, as amended, in view of the following remarks.

Claims 9, 16, 32, 34 and 42 have been amended to exclude a crosslinking additive. The amendment is supported at page 15, line 38. The paints may contain a crosslinking additive but are not required to do so. Accordingly, Applicants have excluded the cross-linking additive. As decided in In re Johnson and Farnham, 558 F.2d 1008 (1977), it is for the inventor to decide what bounds of protection he will seek. If a written description in the original specification supported the claims in absence of a limitation, that specification, having described the whole, necessarily describes the part remaining. In the present application, the original claims were fully supported by the written description of the specification. Applicants have merely narrowed their claims with respect to the presence of a cross-linking agent. According to Johnson and Farnham, the specification, having described the whole, necessarily describes the part remaining. Thus, Applicants have not created new matter.

The rejection of Claims 34, 35, 39 and 42 under 35 U.S.C. §102(b) as anticipated by Fölsch et al and the rejection of Claims 36-38, 40 and 41 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, 35 U.S.C. §103(a) as being unpatentable over Fölsch et al are respectfully traversed.

Amended Claim 34 relates to a method of improving a wet abrasion resistance of a polymer bound emulsion paint, comprising:

mixing an aqueous dispersion of a copolymer P as a binder into a latex paint which additionally comprises at least one inorganic pigment, an inorganic filler/extender and an auxilliary;

wherein said copolymer P comprises in polymerized form

a) as monomer M 1:

0.5 to 1.0% by weight of an acidic monomer selected from the group consisting of itaconic acid, a salt of itaconic acid an anhydride of itaconic acid and a combination thereof, and

0 to 0.5% by weight of a second monomer selected from the group consisting of acrylic acid and methacrylic acid based on a total weight of said copolymer P;

provided that a total amount of said acidic monomer and said second monomer is from 0.5 to 1.0% by weight, based on the total weight of said copolymer P, and the weight ratio of said second monomer to said acidic monomer does not exceed 1:1;

b) 90 to 99.9 % by weight of monomers M2 selected from the group consisting of vinylaromatic monomers, esters of ethylenically unsaturated C₃-C₈ monocarboxylic acids with C₁-C₁₂-alkanols, and vinyl esters of aliphatic C₁-C₁₂ monocarboxylic acids, based on a total amount of said copolymer P; and

c) **0.1 to 10 % by weight of at least one monomer M3 which comprises an urea group**, based on the total weight of copolymer P; and

wherein said aqueous polymer dispersion contains no polymerized acrolein;

ii) at least one inorganic pigment,

iii) an inorganic filler or an inorganic extender; and

iv) an auxiliary;

wherein said aqueous dispersion or said latex paint contains no cross-linking additive.

Amended Claim 42 relates to an emulsion paint having the copolymer used in Claim 34 and **containing no cross-linking additive**.

Fölsch et al fail to disclose or suggest a method of improving a wet abrasion resistance as claimed in Claim 34 or an emulsion paint as claimed in Claim 42. In particular, Fölsch et al require that the binders disclosed therein have either a crosslinking agent, which is capable of cross-linking the alkylene urea side group of the polymeric binder (see col. 2, lines 26 to 32) or that the binders contain a monomer which is capable of cross-linking with the urea side group, since it contains an optionally protected aldehyde group (see col. 2, lines 32 to 39). The claimed emulsion paints neither contain such a crosslinking monomer nor such a crosslinking agent.

Fölsch et al seek to improve the abrasion properties of polymeric films by crosslinking of the binder polymer. The binders in the claimed emulsion paint neither possess nor require such crosslinking properties to achieve good abrasion resistance. Consequently Fölsch et al teach away from the claimed invention.

Therefore, the rejection of Claims 34, 35, 39 and 42 under 35 U.S.C. §102(b) as anticipated by Fölsch et al and the rejection of Claims 36-38, 40 and 41 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, 35 U.S.C. §103(a) as being unpatentable over Fölsch et al are believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of this rejection is respectfully requested.

The rejection of Claims 9-11, 13 and 15-45 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, 35 U.S.C. §103(a) as being unpatentable over Knutson (US 5,118,749) is respectfully traversed.

Amended amended Claim 9 relates to an emulsion paint, comprising:

i) a polymeric binder, which comprises at least one copolymer P of ethylenically unsaturated monomers M in the form of an aqueous polymer dispersion;

ii) at least one inorganic pigment;

iii) an inorganic filler/extender; and

iv) an auxiliary;

wherein said copolymer P has a glass transition temperature T_g in the range of from -10 to +50°C; and

wherein said **copolymer P consists of the following units in polymerized form**

a) 20 to 80 % by weight of at least one monomer M2a, whose homopolymer has a glass transition temperature of $>30^\circ\text{C}$;

b) 20 to 79.7 % by weight of at least one monomer M2b, whose homopolymer has a glass transition temperature of $<20^\circ\text{C}$;

c) 0.5 to 1.5 % by weight of c1) a first acidic monomer M1 selected from the group consisting of itaconic acid, a salt of itaconic acid, an anhydride of itaconic acid, and mixtures thereof, or c2) mixtures of said first acidic monomer with 0 to 0.75 % by weight of a second acidic monomer selected from the group consisting of acrylic acid and methacrylic acid, provided that a total amount of said first acidic monomer and said second acidic monomer is from 0.5 to 1.5% by weight, based on a total weight of said copolymer P; and a weight ratio of said second acidic monomer to said first acidic monomer does not exceed 1:1; and

d) 0.2 to 5% by weight of at least one monomer M3 having at least one urea group; wherein a sum of the amounts of monomers M1, M2a, M2b and M3 is 100% by weight;

wherein said emulsion paint contains no cross-linking additive.

Amended Claim 16 relates to a method of improving the wet abrasion resistance of a polymer-bound coating composition, comprising: mixing a copolymer as a binder with said coating composition. The copolymer has the limitations of the copolymer used in Claim 9.
The binder and said coating composition contains no cross-linking additive.

Amended Claim 32 relates to an emulsion paint, comprising:

i) a polymeric binder, which comprises at least one copolymer P of ethylenically unsaturated monomers M in the form of an aqueous polymer dispersion;

ii) at least one inorganic pigment;

iii) an inorganic filler/extender; and

iv) an auxiliary;

wherein said copolymer P has a glass transition temperature T_g in the range of from -10 to +50°C; and

wherein said **copolymer P consists of the following units in copolymerized form**

i) 20 to 80 % by weight of at least one monomer M2a, whose homopolymer has a glass transition temperature of >30°C;

ii) 20 to 79.7 % by weight of at least one monomer M2b, whose homopolymer has a glass transition temperature of <20°C;

iii) 0.5 to 1.0 % by weight of itaconic acid as monomer M1; and

iv) 0.2 to 5% by weight of at least one monomer M3 having at least one urea group;

wherein a sum of the amounts of monomers M1, M2a, M2b and M3 is 100% by weight;

wherein said copolymer P contains no polymerized acrolein;

wherein said emulsion paint contains no cross-linking additive.

Knutson fails to clearly and unambiguously disclose a polymeric binder, which consists exclusively of monomers M1, M2 (or M2a, M2b) and M3 and has no cross-linking additive. As a matter of fact, Knutson discloses a large number of monomers which are different from monomers M1 to M3, e.g. acetoacetate monomers VII and cyanoacetate monomers VI (see col. 5), crylamide monomers 11 (col. 6), hydroxyalkyl acrylates (see col. 4, lines 10 to 23), methacrylic acid (which is preferably used as an acid in amounts of from 2 to 5 %; see col. 4, line 38). Firstly, it must be noted that the polymers of Knutson contain preferably hydroxyalkyl acrylates (see col. 4, lines 10 f.). Secondly, Knutson discloses to combine ureido monomers (such as M3) with hydroxyalkyl acrylates (see col. 5). Thirdly, the preferred acid of Knutson is methacrylic acid (see col. 4, line 32 especially when the polymer contains ureido monomers (see col. 5, lines 40 to 45 in combination with lines 55 to 60). Knutson does not disclose any polymer containing itaconic acid in the claimed range together with ureido monomers and monomers M2 in the absence of any further monomers and particularly in the absence of cross-linkers.

Further, Knutson does not address the problem of abrasion resistance but seeks to improve viscosity properties (see introductory part of Knutson). Knutson does not recognize that binders, which contain small amounts of itaconic acid, dramatically increase abrasion resistance of a latex paint. Knutson even prefers methacrylic acid, which was shown by the inventors to yield binders providing poor abrasion resistance. Consequently Knutson teaches away from the claimed invention.

Therefore, the rejection of Claims 9-11, 13 and 15-45 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, 35 U.S.C. §103(a) as being unpatentable over Knutson (US 5,118,749) is believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of this rejection is respectfully requested.

In addition, the rejection of Claims 34-42 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, 35 U.S.C. §103(a) as being unpatentable over Farwaha et al (US 5,455,298) is respectfully traversed.

The polymeric binder disclosed in Farwaha et al must contain monomers having an acetoacetate moiety (see claim 1 and summary of invention in col. 2). However, the polymeric binder in the claimed emulsion paint does not contain such monomers since the polymer consists of monomers that do not have such a moiety.

Farwaha et al seek to improve the abrasion properties of polymeric films by crosslinking of the binder polymer (Farwaha et al, col. 1 line 60 to col. line 16, especially col. 2 line 13 in combination with the summary of invention, from which is clear that acetoacetate moieties serve as the reactive site for curing, i.e. for a crosslinking reaction). The binders in the claimed emulsion paint neither possess nor require such crosslinking properties to achieve good abrasion resistance. Consequently, Farwaha et al teach away from the claimed invention.

Therefore, the rejection of Claims 34-42 under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, 35 U.S.C. §103(a) as being unpatentable over Farwaha et al (US 5,455,298) is believed to be unsustainable as the present invention is neither anticipated nor obvious and withdrawal of this rejection is respectfully requested.

The objection to Claim 45 under 37 C.F.R. § 1.75(c) and the rejection of Claim 45 under 35 U.S.C. §112, 2nd paragraph, is respectfully traversed. While Claim 28 may have 0% of monomer M4, Claim 45 requires that M4 be present and excludes 0% of M4. However,)% of M4 could still be present in Claim 28. Thus, Claim 45 further limits Claim 28. The objection and the rejection should be withdrawn.

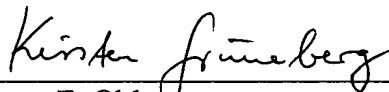
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The rejection of Claim 11 under 35 U.S.C. §112, 2nd paragraph, is obviated by the amendment of Claim 11.

This application presents allowable subject matter, and the Examiner is kindly requested to pass it to issue. Should the Examiner have any questions regarding the claims or otherwise wish to discuss this case, he is kindly invited to contact Applicants' below-signed representative, who would be happy to provide any assistance deemed necessary in speeding this application to allowance.

Respectfully submitted,

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